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ABSTRACT

This paper describes a program of research into children's understanding of psychological principles underlying social behavior. An initial study had indicated that at about 10 years of age children knew many of the basic principles of social behavior and the rules for social control. Two strategies were developed to explore these findings in depth. In the first, an attempt was made to identify objective conditions that make self-regulation (delay of gratification and resistance to temptation) either difficult or easy. In the second, the individual's own developing understanding of effective strategies for self-regulation, such as plans, was explored. Among preschool children the ability to delay gratification was found to be enhanced when delayed rewards were not in view. It was further found that the effect of the presence or absence of rewards could be overcome by changing how the child ideationally represented those rewards during the delay period. In experimental situations, children's spontaneous delay strategies showed a clear developmental progression in knowledge of effective delay rules. It is noted that the same progression has been found in explorations of self-control situations in everyday life. By age 10, some children seemed to have well developed ideas about the nature, organization and function of plans (including plans for self-regulation) in their own lives. (Author/RH)

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The Development of Childrens' Knowledge of Self-Control

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The nature, extent, and origin of people's knowledge about psychological processes has been one of the most enduring questions in psychology; the answer has profound implications for one's view of the human being. At different times in the history of the field, radically different conclusions have been reached about the degree to which people possess such psychological knowledge. In its extreme form, radical behaviorism suggested an image of human organisms responding automatically to stimuli and remained mute about people's possible knowledge of the psychological principles or rules that govern their own behavior. And in spite of the "cognitive revolution" of the last decade, which allocates an extensive role to cognition in human conduct (e.g., Bandura, 1977; Mischel, 1973), the status of people as intuitive psychologists remains highly controversial (e.g., compare Mischel, 1977 and Nisbett & Wilson, 1977).

The Child as Intuitive Psychologist

As one part of my research program on cognitive social learning person variables (Mischel, 1973) my associates and I have been exploring the development of various facets of the child's cognitive competencies. We view children as potentially sophisticated intuitive psychologists who come to know and use psychological principles for understanding social behavior, for regulating their own conduct, and for achieving increasing mastery and control over their environments. More specifically, in one direction, to study the development of children's cognitive competencies we have begun to explore their

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growing understanding of psychological principles underlying social behavior. Many of us have quipped at cocktail parties about how our grandmothers knew most of the things we psychologists labor so heavily to discover empirically. Being more interested in the potential wisdom of young children than of grandmothers, we decided to see which findings, if any, from the bedrock principles of our field would become known to youngsters early in the course of development (Mischel & Mischel, 1978). We constructed objective multiple choice tests that confronted children (from preschool age through the sixth grade) with highly specific questions requiring them to predict the probable outcome of classical experiments in psychology which we carefully described in detail, stripped of jargon and phrased in age-appropriate ways. These experiments ranged from Asch's study on conformity, through Bandura's work on modeling, Pavlov's classical conditioning and Skinner's studies of reinforcement schedules. To our perhaps naive surprise, by the time the children reached about age ten years they knew an impressive amount about the basic principles of social behavior and the rules for social control. They knew, for example, about the aggression-facilitating effects of watching aggressive models; they knew that live modeling with guided participation is a more effective treatment for phobias than either systematic desensitization or symbolic (film-based) modeling; they knew that Harlow's frightened monkeys would cling to the milkless terry cloth mother more than to the wire one with milk. And although fourth graders did not know a bystander will be more likely to help when alone than when in a group, this ostensibly non-obvious insight of social psychology was known to children by the time they reached the sixth grade. Moreover, the children knew most of these psychological principles at $p \leq .001$.

Lest we decide to rely exclusively on our children's psychological knowledge, let me emphasize their knowledge was not limitless: they were systematically wrong, for example, about conformity in the Asch situation, and about the effects of Festinger's cognitive dissonance, and they did not know Pavlov's discovery about classical conditioning. (I certainly hope that Asch, Festinger, and Pavlov were right.) They did, however, know that intermittent reinforcement makes Skinner's pigeons peck longer after the food stops (at $p \leq .002$). The fact that by grade six we get correlations as high as .93 (in a small sample, N=10) with intelligence test scores, makes us feel that spontaneous knowledge of psychological principles about social behavior may indeed be an important ingredient of personal and cognitive competence worth pursuing systematically.

Plans for Self-Regulation

In fact, stimulated by the work of John Flavell on metacognition, we have been studying children's understanding of psychological principles for self-regulation in depth, using a two-pronged strategy. First, we try to identify the objective conditions that make self-regulation (and particularly delay of gratification and resistance to temptation) either difficult or easy (e.g., Mischel, 1974; Mischel & Patterson, 1978; Moore, Mischel, & Zeiss, 1976). Second, we are exploring the individual's own developing understanding of effective strategies for self-regulation--a core aspect of adaptive human functioning, basic to virtually all conceptions of personality and the coping process. Part of our research in this vein has been examining the nature, uses and organization of plans developmentally. For example, in one direction, by means of structured interview techniques, we have been inquiring into what "plans" mean to young children, what kinds of plans they form for coping with everyday self-control problems, how they conceptualize them, and say they use them. These interviews

inquire into the childrens' everyday plans for increasing control over the environment in general, as well as for enhancing self-control when waiting for such things as cookies, for mother to be free, for Christmas or for the winter ski vacation. The data, while still tentative, promise to be extremely rich. Children as young as eight years of age seem able to discuss plans articulately and give good examples of when and how they use them to structure and organize their behavior (e.g., "Tomorrow I'll clean up my room. . .next week I'm gonna have a birthday party — if Mommy helps me . . .").

By age ten, some children in our interviews seem to have well-developed ideas about the nature, organization and function of plans in their own lives. They may distinguish, for instance, between the intentional aspect of a plan ("I'm planning to clean up my room tomorrow because I'm planning to have a friend over"), its informative function ("a plan tells you what to do and when and where and how to do it"), and its execution ("you have to make yourself do it when the time comes: planning is the part you do beforehand but then doing it is the actual right there part."). At older ages, children seem aware of many strategies for forming and implementing effective plans (e.g., elaborate mental rehearsal, public commitment, externalizing the plan by sharing it with others, re-arranging and "marking" the environment, using mnemonics, etc.). With greater age, there also may be increasing reliance on a kind of cognitive 'short-hand' in which the formation and implementation of many complex plans may become more automatic, abbreviated and rapid, without requiring extensive or explicit self-instructions for each step in an increasingly complex organizational hierarchy. As one eleven-year-old put it:

> If I had to teach a plan to someone who grew up in the jungle -- like a plan to work on a project at 10 a.m. tomorrow -- I'd tell him what to say to himself to make it easier at the start for him. Like "if I do this plan [emphasized word] on time I'll get a reward and the teacher will like me and I'll be proud." But for myself, I know all that already so I don't have to say it to myself -- besides it would take too long to say and my mind doesn't have the time for all that -- so I just remember that stuff about why I should do it real quick without saying it -- it's like a method that I know already in math; once you have the method you don't have to say every little step.

Reassuringly, the gist of natural plans to increase control also seems generally congruent with findings from behavior modification efforts. Those findings show, for example, the value of giving clients controlling responses that are incompatible with the to-be-avoided behavior, and of providing a focus on the negative consequences of transgressions plus the positive consequences of self-control (Kanfer, 1980; Mahoney, 1974).

Facilitating and Debilitating Self-control Strategies

The neglect by researchers of children's developing awareness of self-control strategies may reflect the fact that until recently there were few objective criteria against which one could assess the relative efficacy of various strategies for self-control. Studies of the conditions that enhance or impede successful delay of gratification in children (e.g., Mischel, 1974; Miller & Karniol, 1976a, 1976b; Toner & Smith, 1977) now provide a basis for assessing the child's developing understanding against objective criteria of efficacy.

For example, previous research has shown the dramatic role of attention to the rewards in self-imposed delay of gratification. Specifically, initial theorizing (reviewed in Mischel, 1974) suggested that during delay of gratification attention to the rewards should facilitate the child's ability to wait for them. Specifically, predictions based on Freudian theory suggested that a cognitive focus on the delayed rewards should provide a crucial cathexis of the desired but blocked objects, allowing the child to "bind time" during the delay period. Predictions from classical behavior theory likewise suggested that any cues related to the desired rewards should provide the fractional anticipatory goal responses needed to sustain the effort of further delay. Empirically, all these expectations proved to be exactly wrong: preschool children were able to wait ten times longer when the rewards in the contingency were <u>not</u> available for attention during the delay period than when any of the rewards were in view (Mischel & Ebbesen, 1970; Mischel, 1974). Moreover, we found that the effects of the actual rewards physically present or absent in the situation would be completely overcome and even totally reversed by changing how the child represented those rewards mentally during the delay period. For example (Mischel & Baker, 1975), when preschoolers ideate about the rewards for which they are waiting in consummatory or "hot" ways (for example, focusing on their taste), on how crunchy and salty the pretzels are, they can hardly delay at all; but if they

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focus on the nonconsummatory or "cool" qualities of the rewards (on their abstract or nonconsummatory qualities) they can wait for them easily and even longer than if they distract themselves from the rewards altogether (Mischel, 1974). Thus "hot" reward-oriented ideation decreases delay by making it more aversively frustrative and arousing. In contrast, delay is facilitated by ideation about the task-contingency, and by "cool" ideation focusing on the abstract (rather than consummatory) features of the rewards. In sum,

making the blocked outcome more available, by attending to it or by thinking about it in consummatory (arousing) ways increases the frustrativeness of the situation and makes delay more difficult.

Research Strategy

Our basic method to study children's developing knowledge of effective delay strategies consists of structuring a delay of gratification situation (either EID or SID, using the Miller and Karniol, 1976a, b, distinction) and then assessing the strategies children believe will help them wait most effectively. We have done this both by means of verbal inquiries (W. Mischel, H.N. Mischel, & S. Q. Hood, 1978; H. N. Mischel, W. Mischel, & S. Q. Hood, 1978) and by letting the subject actually choose and create the preferred stimulus arrangement during the delay period (Yates & Mischel, 1979).

To illustrate, in one study (W. Mischel, H. N. Mischel, and S. Q. Hood, 1978), in a delay of gratification paradigm, children of different ages (preschool and grades 3 and 6) were asked whether it would help them wait if the delayed rewards were exposed or covered during the delay period. They were then instructed to suppose that the rewards would be exposed and were asked what they could think about to help them to wait. After the children's spontaneous ideas were elicited, pairs of alternative ways of ideating about the rewards were presented with the instruction to choose the one from each pair that would most help the child to wait for the rewards (Table 1). One choice was between the consummatory ("hot") properties of the delayed rewards and their abstract, nonconsummatory ("cool") properties. A second choice was between "hot" ideation about the rewards and task-contingency ideation. The sequence in which the choice pairs, and the items in each pair, were presented was randomized. Following each choice the child was asked the reason for choosing as s/he had. To test for possible preferences for "hot" or "cool" ideation apart

from the delay of gratification context, one half of the subjects in each group served as their own controls, first making the choice between "hot" and "cool" ideation about the reward objects in a non-delay situation and later choosing in the delay context. This control allowed us to assess whether any age-related

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Insert Tables 1, 2, and 3 about here

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changes in hot-cool ideational preferences reflected the child's changing knowledge of delay rules or merely developmental changes in preferences for hot-cool ideation regardless of its value for effective delay.

The Development of Self-Control Competencies

We have been finding that younger children spontaneously prefer to view the real stimuli during delay of gratification: when the desired object is blocked, the frustrated child tries to see it, to "have it," to attend to it. But in so doing, the young child is making self-imposed delay not easier but even more difficult for himself by increasing his desire and hence enhancing the frustrativeness of the delay (e.g., Mischel, 1974 — especially if this ideation is consummatory ("hot") rather than more abstract ("cool") (Mischel & Baker, 1975; Moore, Mischel, & Zeiss, 1976). The youngster is then trapped in a delay-defeating cycle, attending to the consummatory qualities of what he really wants and becoming increasingly frustratively aroused, thereby making it even harder to delay successfully. That happens because attention to the real stimuli increases the frustrativeness of the delay and reduces the length of voluntary waiting (Mischel, 1974; Schack & Massari, 1973; Toner & Smith, 1977). With greater increasing cognitive development, the child comes to recognize, prefer, and spontaneously generate attentional strategies that avoid frustrative arousal and

Table 1

Ideation Alternatives*

Hot:	"The marshmallows taste yummy and chewy."
Cool:	"The marshmallows are puffy like clouds."
Task-Contingency:	"I am waiting for the two marshmallows."

*Subjects chose between hot versus cool and hot versus task-oriented ideation. (The table shows the alternatives when the delayed rewards were two marshmallows.)

From W. Mischel, H. N. Mischel, & S. Q. Hood, 1978.

that reduce his own conflict and temptation. As children increase their ability to deal with stimuli more abstractly, they can and do transform them and the delay situation in delay-facilitating ways (Mischel, 1974; Moore, Mischel, & Zeiss, 1976), instructing themselves about the contingency while avoiding hot ideation about the temptation.

Children's spontaneous delay strategies show a clear developmental progression in knowledge of effective delay rules. A few preschoolers suggest a self-distraction strategy or even rehearsal of the task-contingency. Most children below the age of five years however, do not seem to generate clear or viable strategies for effective delay; instead they tend to make waiting more difficult for themselves by focusing on what they want but cannot have. By the age of six years they know that covering the rewards will help them wait for them while looking at them or thinking about them will make it difficult. By third grade children spontaneously generate and reasonably justify a number of potentially viable strategies and unequivocally understand the basic principles of resistance to temptation. For example, avoid looking at the rewards because: "If I'm looking at them all the time, it will make me hungry. . . and I'd want to ring the bell." Most often they focus on the task and contingency, reminding themselves of the task requirement and outcomes associated with each choice ("If you wait you get _____; if you don't you only get _____"). They also often indicate the value of distraction from the rewards or of negative ideation designed to make them less tempting ("Think about gum stuck all over them"). A small minority still suggest that positive ideation about the rewards ("The marshmallow looks good and fluffy") will help, and one wonders if these are the very youngsters for whom delay is likely to be most

difficult. Most third graders clearly know that task-contingency ideation helps delay more than hot reward ideation but they still do not know that cool reward ideation is better than hot reward ideation. By the time they reach sixth grade, the children's spontaneous strategies (just like their formal preferences), show considerable sophistication. Now most of these youngsters seem to clearly recognize the advantage for delay of cool rather than hot ideation about the rewards. The basic delay rules have been firmly mastered.

Incidentally, the developmental results we have been getting from our systematic studies of children's knowledge of effective delay strategies appear to apply equally to EID and SID situations (using Miller and Karniol's 1976a, b distinction). That is, children seem to show the same age-related changes in preferred strategies for EID and SID tasks (H.N. Mischel, W. Mischel, & S. Q. Hood, 1978), raising questions about the exact nature and meaning of that distinction.

Perhaps, most important, we are finding the same meaningful developmental sequence in childrens' growing knowledge of effective self-control rules when we explore the everyday self-control situations they deal with in their lives (waiting for birthdays, cookies, Christmas, the family ski trip) as we find when we examine their delay knowledge in our experimental situations.

In sum, a comprehensive, coherent account of the genesis of knowledge about delay of gratification seems to be emerging. In the course of development children show increasing awareness of effective delay rules and come to generate the strategies necessary for effectively reducing frustration and temptation. They progress from a systematic preference for seeing and thinking about the real blocked rewards and hence the worst delay strategy (Yates & Mischel, 1979), to randomness, to a clear avoidance of attention to the rewards and particularly of

consummatory hot reward ideation. Systematically they come to prefer distraction from the temptation, self-instructions about the task-contingency, and cool ideation about the rewards themselves. These developmental shifts seem to reflect a growing recognition by the child of the principle that the more cognitively available and "hot" a temptation the more one will want it and the more difficult it will be to resist. Armed with this insight the child can generate a diverse array of strategies for effectively managing otherwise formidable tasks, and for overcoming "stimulus control" with self-control. It will be important to trace further not only the development of this cognitive competence but also the timetable and mechanisms for its effective application to relevant self-control tasks as well as the conditions that might impede or enhance the developmental progression. While knowledge of self-control rules is only one component of the growth of effective self-control, it appears to follow a predictable developmental sequence of potential theoretical and practical importance. We will want to know not only when do children know what rules, but also what determines the cognitive availability, the accessibility of those rules when they are needed and their activation to guide behavior, so that we can understand more fully the links between cognitive competence and self-regulatory behavior.

References

Bandura, A. Social learning theory. Englewood Cliffs, N.J.: Prentice Hall, 1977.

Kanfer, F. H. Self-management methods. In F. H. Kanfer & A. P. Goldstein (Eds.), Helping people change (second edition). New York: Pergamon Press, 1980.

Mahoney, M. J. Cognition and behavior modification. Cambridge, Mass.: Ballinger, 1974.

Miller, D. T., & Karniol, R. Coping strategies and attetnional mechanisms in self-imposed and externally imposed delay situations. Journal of Personality and Social Psychology, 1976, 34, 310-316. (a)

Miller, D. T., & Karniol, R. The role of rewards in externally and self-imposed delay of gratification. Journal of Personality and Social Psychology, 1976, 33, 594-600. (b)

Mischel, H.N., Mischel, W., & Hood, S. Q. The development of knowledge about self-control. Unpublished manuscript, Stanford University, 1978.

Mischel, W. Toward a cognitive social learning reconceptualization of personality. Psychological Review, 1973, 80, 252-283.

Mischel, W. Processes in delay of gratification. In L. Berkowitz (Ed.), Advances in experimental social psychology (Volume 7). New York: Academic Press, 1974.

Mischel, W. The interaction of person and situation. In D. Magnusson & N. S. Endler (Eds.), Personality at the crossroads: Current issues in interactional psychology. Hillsdale, N.J.: Erlbaum, 1977.

Mischel, W., & Baker, N. Cognitive appraisals and transformations in delay behavior. Journal of Personality and Social Psychology, 1975, 31, 254-261.

Mischel, W., & Ebbesen, E. B. Attention in delay of gratification. Journal of Personality and Social Psychology, 1970, 16, 329-337.

Mischel, W., & Mischel, H.N. Childrens' knowledge of psychological principles. Unpublished manuscript, Stanford University, 1978.

Mischel, W., Mischel, H.N., & Hood, S. Q. The development of knowledge of effective ideation to delay gratification. Unpublished manuscript, Stanford University, 1978.

Mischel, W., & Patterson, C. J. Effective plans for self-control in children. Minnesota Symposium on Child Psychology, Minneapolis, Minnesota: University of Minnesota Press, 1978.

Moore, B., Mischel, W., & Zeiss, A. Comparative effects of the reward stimulus and its cognitive representation in voluntary delay. Journal of Personality and Social Psychology, 1976, 34, 419-424.

Nisbett, R. E., & Wilson, T. D. Telling more than we can know: Verbal reports on mental processes. Psychological Review, 1977, 84, 231-259.

Schack, M. L., & Massari, D. J. Effects of temporal aids on delay of gratification. Developmental Psychology, 1973, 8, 168-171.

Toner, I. J., & Smith, R. A. Age and overt verbalization in delay-maintenance behavior in children. Journal of Experimental Child Psychology, 1977, 24, 123-218.

Yates, B. T., Mischel, W. Young children's preferred attentional strategies for delaying gratification. Journal of Personality and Social Psychology, 1979, 37, 286-300.